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Page 3**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:**Claims 1-18. (Canceled without prejudice or disclaimer).**

19. (New) An automatic gridding method of a pipe for modeling fluids carried by the pipe, comprising:

defining a minimum cell size and a maximum cell size for the gridding of the pipe;

subdividing the pipe into sections delimited by bends of the pipe;

positioning a cell of minimum size on either side of each bend;

positioning a cell, whose size is at most equal to the maximum cell size, in a central part of each section and defining two intermediate portions delimited by each cell of the minimum size and the cell whose size is at most equal to the maximum cell size;

gridding the pipe by distributing on the two intermediate portions intermediate cells of increasing or decreasing sizes from the minimum cell size to the size of the cell whose size is at most equal to the maximum cell size; and

implementing codes for modeling the fluids carried by the pipe from the gridding of the pipe.

20. (New) A method as claimed in claim 19, wherein sizes of the intermediate cells vary from the minimum size to a size of the cell whose size is at most equal to the maximum cell size.

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21. (New) A method as claimed in claim 19, wherein:

the intermediate cells are distributed on the intermediate portions of each section by defining for each intermediate portion lines intersecting at a point of intersection, and forming an angle between the lines,

determining for each intermediate portion points of intersection between the portion and the lines; and

distributing the intermediate cells according to the points of intersection.

22. (New) A method as claimed in claim 20, wherein:

the intermediate cells are distributed on the intermediate portions of each section by defining for each intermediate portion lines intersecting at a point of intersection, and forming an angle between the lines,

determining for each intermediate portion points of intersection between the portion and the lines; and

distributing the intermediate cells according to the points of intersection.

23. (New) A method as claimed in claim 20, comprising:

determining a position of the point of intersection for each intermediate portion by defining an axis passing through a bend of each intermediate portion and a perpendicular to each intermediate portion; and

determining a position of the point of intersection on the axis at a distance from a bend which is a function of the minimum cell size, a size of the cell whose size is at most equal to the maximum cell size and of a distance between the cell of minimum cell size and the cell whose size is at most equal to the maximum cell size.

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24. (New) A method as claimed in claim 19, comprising:
previously simplifying a topography of the pipe before automatic gridding of
the pipe.

25. (New) A method as claimed in claim 20, comprising:
previously simplifying a topography of the pipe before automatic gridding of
the pipe.

26. (New) A method as claimed in claim 21, comprising:
previously simplifying a topography of the pipe before automatic gridding of
the pipe.

27. (New) A method as claimed in claim 22, comprising:
previously simplifying a topography of the pipe before automatic gridding of
the pipe.

28. (New) A method as claimed in claim 23, comprising:
previously simplifying a topography of the pipe before automatic gridding of
the pipe.

29. (New) A method as claimed in claim 24, comprising:
determining a curve representative of the topography of the pipe by
representing the pipe as a graph connecting a curvilinear abscissa and a level
variation;

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simplifying sections of the pipe by assigning to each point of the curve between two successive sections a weight accounting for a length of the sections of the pipe and respective slopes thereof; and

selecting among points arranged in an increasing or decreasing order of weight, points whose weight is greatest.

30. (New) A gridding method as claimed in claim 25, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation;

simplifying sections of the pipe by assigning to each point of the curve between two successive sections a weight accounting for a length of the sections of the pipe and respective slopes thereof; and

selecting among points arranged in an increasing or decreasing order of weight, points whose weight is greatest.

31. (New) A gridding method as claimed in claim 26, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation;

simplifying sections of the pipe by assigning to each point of the curve between two successive sections a weight accounting for a length of the sections of the pipe and respective slopes thereof; and

selecting among points arranged in an increasing or decreasing order of weight, points whose weight is greatest.

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32. (New) A gridding method as claimed in claim 27, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation;

simplifying sections of the pipe by assigning to each point of the curve between two successive sections a weight accounting for a length of the sections of the pipe and respective slopes thereof; and

selecting among points arranged in an increasing or decreasing order of weight, points whose weight is greatest.

33. (New) A gridding method as claimed in claim 28, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation;

simplifying sections of the pipe by assigning to each point of the curve between two successive sections a weight accounting for a length of the sections of the pipe and respective slopes thereof; and

selecting among points arranged in an increasing or decreasing order of weight, points whose weight is greatest.

34. (New) A method as claimed in claim 29, comprising:

selecting points of the curve whose weight is greatest by locating in an arrangement of the points a weight discontinuity that is above a fixed threshold.

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35. (New) A method as claimed in claim 30, comprising:

selecting points of the curve whose weight is greatest by locating in an arrangement of the points a weight discontinuity that is above a fixed threshold.

36. (New) A method as claimed in claim 31, comprising:

selecting points of the curve whose weight is greatest by locating in an arrangement of the points a weight discontinuity that is above a fixed threshold.

37. (New) A method as claimed in claim 32, comprising:

selecting points of the curve whose weight is greatest by locating in an arrangement of the points a weight discontinuity that is above a fixed threshold.

38. (New) A method as claimed in claim 33, comprising:

selecting points of the curve whose weight is greatest by locating in an arrangement of the points a weight discontinuity that is above a fixed threshold.

39. (New) A method as claimed in claim 24, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation of the pipe;

simplifying sections of the pipe by forming a frequency spectrum of the curve representative of the topography of the pipe;

attenuating highest frequencies of the frequency spectrum showing smallest variations of the topography of the pipe; and

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reconstructing a simplified topography of the pipe corresponding to a rectified frequency spectrum.

40. (New) A gridding method as claimed in claim 25, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation of the pipe;

simplifying sections of the pipe by forming a frequency spectrum of the curve representative of the topography of the pipe;

attenuating highest frequencies of the frequency spectrum showing smallest variations of the topography of the pipe; and

reconstructing a simplified topography of the pipe corresponding to a rectified frequency spectrum.

41. (New) A gridding method as claimed in claim 26, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation of the pipe;

simplifying sections of the pipe by forming a frequency spectrum of the curve representative of the topography of the pipe;

attenuating highest frequencies of the frequency spectrum showing smallest variations of the topography of the pipe; and

reconstructing a simplified topography of the pipe corresponding to a rectified frequency spectrum.

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42. (New) A gridding method as claimed in claim 27, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation of the pipe;

simplifying sections of the pipe by forming a frequency spectrum of the curve representative of the topography of the pipe;

attenuating highest frequencies of the frequency spectrum showing smallest variations of the topography of the pipe; and

reconstructing a simplified topography of the pipe corresponding to a rectified frequency spectrum.

43. (New) A gridding method as claimed in claim 28, comprising:

determining a curve representative of the topography of the pipe by representing the pipe as a graph connecting a curvilinear abscissa and a level variation of the pipe;

simplifying sections of the pipe by forming a frequency spectrum of the curve representative of the topography of the pipe;

attenuating highest frequencies of the frequency spectrum showing smallest variations of the topography of the pipe; and

reconstructing a simplified topography of the pipe corresponding to a rectified frequency spectrum.

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44. (New) A method as claimed in claim 39, comprising:

sampling the curve representative of the topography of the pipe with a sampling interval selected so that a smallest pipe section contains at least two sampling intervals;

determining the frequency spectrum of the sampled curve;

correcting the frequency spectrum by low-pass filtering using a cutoff frequency selected according to a maximum number of cells used for subdividing the pipe; and

determining the topography of the pipe corresponding to the rectified frequency spectrum.

45. (New) A method as claimed in claim 40, comprising:

sampling the curve representative of the topography of the pipe with a sampling interval selected so that a smallest pipe section contains at least two sampling intervals;

determining the frequency spectrum of the sampled curve;

correcting the frequency spectrum by low-pass filtering using a cutoff frequency selected according to a maximum number of cells used for subdividing the pipe; and

determining the topography of the pipe corresponding to the rectified frequency spectrum.

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46. (New) A method as claimed in claim 41, comprising:

sampling the curve representative of the topography of the pipe with a sampling interval selected so that a smallest pipe section contains at least two sampling intervals;

determining the frequency spectrum of the sampled curve;

correcting the frequency spectrum by low-pass filtering using a cutoff frequency selected according to a maximum number of cells used for subdividing the pipe; and

determining the topography of the pipe corresponding to the rectified frequency spectrum.

47. (New) A method as claimed in claim 42, comprising:

sampling the curve representative of the topography of the pipe with a sampling interval selected so that a smallest pipe section contains at least two sampling intervals;

determining the frequency spectrum of the sampled curve;

correcting the frequency spectrum by low-pass filtering using a cutoff frequency selected according to a maximum number of cells used for subdividing the pipe; and

determining the topography of the pipe corresponding to the rectified frequency spectrum.

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48. (New) A method as claimed in claim 43, comprising:

sampling the curve representative of the topography of the pipe with a sampling interval selected so that a smallest pipe section contains at least two sampling intervals;

determining the frequency spectrum of the sampled curve;

correcting the frequency spectrum by low-pass filtering using a cutoff frequency selected according to a maximum number of cells used for subdividing the pipe; and

determining the topography of the pipe corresponding to the rectified frequency spectrum.